UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
2171	

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _18 December 2003_.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-28_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-28_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _28 June 2001_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received. .

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This communication is responsive to Amendment A, filed 18 December 2003.

2.   Claims 1-28 are pending in this application. Claims 1, 14, 25, 27 and 28 are

independent claims. In Amendment A, no claims were added or cancelled, and claim

26 was amended. This action is made Final.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

3.   Claims 1-2, 9-11, 14, 20-21, 24-25 and 28 are rejected under 35 U.S.C. 102(b)

as being anticipated by the article entitled "Lightweight Remote Procedure Call" by

Bershad et al.

Referring to claim 1, Bershad discloses a system that facilitates communicating

between managed and unmanaged code as claimed. See pages 44-51 for the details

of this disclosure. In particular, Bershad teaches "a system that facilitates

communicating between managed and unmanaged code [cross-domain procedure

calls], comprising:

a first component [local procedure, object, or code segment in its protected

domain (termed 'client')] that is one of the managed [in its protected domain] and

unmanaged code; and

a caller [See sections 3.1 - 3.2] associated with the first component, the caller

invoking [See section 3.2] an object related to a second component [remote procedure,

object, or code segment outside of the first component's protected domain (termed

'server')], the second component being one of the managed and unmanaged code

[outside of the first component's protected domain], the caller including an in-lined stub

[See sections 3.3 & 3.5] that facilitates communications between the objects" as

claimed.

Referring to claim 2, Bershad discloses the system for facilitating communication

between managed and unmanaged code as claimed. See sections 3.3 and 3.5 for the

details of this disclosure. Bershad teaches the system of claim 1, as above, "the in-

lined stub including a call and return pair [See second paragraph of section 3.3] to

facilitate communications between the objects" as claimed.

Referring to claim 9, Bershad discloses the system for facilitating communication

between managed and unmanaged code as claimed. See sections 3.2 – 3.5 for the

details of this disclosure. In particular, Bershad's caller further comprises "calling

convention code [Modula2+ calling convention code] to... organize arguments and an

execution stack [See sections 3.2-3.3 and 3.5] according to the convention of the

unmanaged code" as claimed.

Referring to claim 10, Bershad discloses the system for facilitating

communication between managed and unmanaged code as claimed. See section 3.2

for the details of this disclosure. Bershad teaches the system of claim 9, as above, "the

calling convention code [Modula2+] utilized to interpret one or more return values [See

page 46] from the unmanaged code" as claimed.

Referring to claim 11, Bershad discloses the system for facilitating

communication between managed and unmanaged code as claimed. See section 3.3

for the details of this disclosure. In particular, Bershad teaches the system of claim 1,

as above, "the caller including at least one of an in-lined marshalling code [See the final

paragraph of section 3.3] and an external marshalling code to transfer data between the

objects" as claimed.

Claim 14 is rejected on the same basis as claim 2. See the discussions

regarding claims 1-2 above for the details of this disclosure.

Claims 20 and 21 are rejected on the same basis as claims 9 and 11

respectively, in light of the basis for claim 14 above. See the discussions regarding

claims 1-2, 9 and 11 above for the details of this disclosure.

Claims 24 and 25 are both rejected on the same basis as claim 14 above. See

the discussions regarding claims 1-2 for the details of this disclosure.

Claim 28 is rejected on the same basis as claim 1. See the discussion regarding

claim 1 above for the details of this disclosure.

4.   Claims 1-28 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

Patent No. 6,081,665 to Nilsen et al.

Referring to claim 1, Nilsen discloses a system that facilitates communicating

between managed and unmanaged code as claimed. See Figures 1-6 & 94-95 and the

corresponding portions of Nilsen's specification for this disclosure. In particular, Nilsen

teaches "a system that facilitates communicating [method invocation calls] between

managed and unmanaged code [byte-code or JIT-translated code methods],

comprising:

a first component [byte-code or JIT-translated code segment or object] that is

one of the managed and unmanaged code; and

a caller [See column 13, line 24 – column 18, line 44] associated with the first

component, the caller invoking an object related to a second component [external byte-

code method], the second component being one of the managed and unmanaged code,

the caller including an in-lined stub [See column 15, lines 49-58] that facilitates

communications between the objects" as claimed.

Referring to claim 2, Nilsen discloses the system for facilitating communication

between managed and unmanaged code as claimed. See section 4.2 (columns 17-18)

for the details of this disclosure. In particular, Nilsen teaches the system of claim 1, as

above, "the in-lined stub including a call and return pair [See steps 7 – 8 of the method

of section 4.2] to facilitate communication between the objects" as claimed.

Referring to claim 3, Nilsen discloses the system for facilitating communication

between managed and unmanaged code as claimed. See column 40, lines 27-59 and

column 63, line 64 – column 64, line 5 of Nilsen's specification for this disclosure.

Nilsen teaches the system of claim 1, as above, "further comprising a stack marker

[stack pointer(s)] that is hoisted [relocated or 'contiguously expanded'] from within a

code loop associated with the caller ['a loop that repeatedly calls this procedure'

(column 40, line 46)] to facilitate code execution performance during communications between the objects" as claimed.

Referring to claim 4, Nilsen discloses the system for facilitating communication between managed and unmanaged code as claimed. See section 4.2 (columns 17-18) of Nilsen's specification for the details of this disclosure. Nilsen's caller further comprises "transition code ['the monitor' (see steps 5 & 9 of the method of section 4.2)] to synchronize execution between the objects" as claimed. See section 6.2 for the details of the monitor.

Referring to claim 5, Nilsen discloses the system for facilitating communication between managed and unmanaged code as claimed. See sections 4.2 and 5.0 as well as Figure 42 and the corresponding portion of Nilsen's specification for this disclosure. Nilsen's caller further comprises one or more flags [preemption flags] to synchronize execution between the objects [See the method of section 4.2 and the discussion in section 5.0] as claimed.

Referring to claim 6, Nilsen discloses the system for facilitating communication between managed and unmanaged code as claimed. Again, see sections 4.2 and 5.0 as well as Figure 42 and the corresponding portion of Nilsen's specification for this disclosure. Nilsen teaches the system of claim 5, as above, "the one or more flags utilized to synchronize code execution [See steps 6-11 of the method of section 4.2] with a garbage collector [See section 5.0]" as claimed.

Referring to claim 7, Nilsen discloses the system for facilitating communication between managed and unmanaged code as claimed. See sections 4.2, 5.0 and 5.5 as

well as Figure 42 and the corresponding portion of Nilsen's specification for this

disclosure. Nilsen teaches the system of claim 6, "the one or more flags utilized to

suspend return operations from the unmanaged code [preempt using 'slow pointers'

(See section 5.0 and column 24, line 59 et seq.)] until operations associated with the

garbage collector have completed" as claimed.

Referring to claim 8, Nilsen discloses the system for facilitating communication

between managed and unmanaged code as claimed. See section 4.2 for the details of

this disclosure. In particular, Nilsen's caller further comprises security attribute code

[JIT-translator and byte-code interpreter] to insulate the objects from at least one of

code and security implementation details [See section 4.2] as claimed.

Referring to claims 9 and 10, Nilsen discloses the system for facilitating

communication between managed and unmanaged code as claimed. See section 4.2

for the details of this disclosure. Nilsen's caller further comprises calling convention

code [pvm()] to organize arguments and an execution stack [Step 7 (See sections 2.0 –

3.0)] and interpret return values from the unmanaged code [Step 8] as claimed.

Referring to claim 11, Nilsen discloses the system for facilitating communication

between managed and unmanaged code as claimed. See section 4.2 for the details of

this disclosure. Nilsen's caller includes an in-lined marshalling code [pvm()] to transfer

data between the objects [See sections 2.0 – 3.0] as claimed.

Referring to claims 12 and 13, Nilsen discloses the system for facilitating

communication between managed and unmanaged code as claimed. See column 5,

line 66 – column 6, line 6 and the corresponding portions of Nilsen's detailed description

for the details of this disclosure. Nilsen's caller further comprises an extensibility

component ['mechanism to translate traditional Java byte codes into the extended

PERC byte codes' (column 6, lines 3-4)] including a function pointer that includes one or

more functions as arguments [See sections 2.0 – 3.0] for facilitating generalized

communication between the objects as claimed.

Claim 14 is rejected on the same basis as claim 2. See the discussions

regarding claims 1 and 2 above for the details of this disclosure.

Claims 15-16 are rejected on the same basis as claims 3-4 respectively, in light

of the basis for claim 14. See the discussions regarding claims 1-4 above for the details

of this disclosure.

Claims 17-20 are rejected on the same basis as claims 6-9 respectively, in light

of the basis for claim 14. See the discussions regarding claims 1-9 above for the details

of this disclosure.

Claims 21-23 are rejected on the same basis as claims 11-13 respectively, in

light of the basis for claim 14. See the discussions regarding claims 1-2 and 11-13

above for the details of this disclosure.

Claims 24 and 25 are rejected on the same basis as claim 14. See the

discussions regarding claims 1-2 above for the details of this disclosure.

Claim 26 is rejected on the same basis as claim 15, in light of the basis for claim

25. See the discussions regarding claims 1-3 above for the details of this disclosure.

Claim 27 is rejected on the same basis as claims 1-3 above. See the

discussions regarding claims 1-3 for the details of this disclosure.

Claim 28 is rejected on the same basis as claim 1. See the discussion regarding

claim 1 above for the details of this disclosure.

Response to Arguments

5.   Applicant's arguments filed 18 December 2003 have been fully considered but

they are not persuasive.

Referring to applicants' remarks on pages 6-7 regarding the Section 102

rejections of the independent claims over Bershad: Applicants argued that Bershad's

stub is different from the claimed "in-lined stub" because it is external to the calling

function, and therefore that Bershad does not teach or suggest an "in-lined stub" as

claimed.

The examiner disagrees for the following reasons: Applicants are arguing over

features that are not claimed. In response to applicant's argument that the references

fail to show certain features of applicant's invention, it is noted that the features upon

which applicant relies (i.e., that the in-lined stub is incorporated within a calling function

and facilitates higher processor execution performance than what is permitted by calling

an external stub routine) are not recited in the rejected claim(s). Although the claims

are interpreted in light of the specification, limitations from the specification are not read

into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir.

1993). The examiner maintains that Bershad's caller [termed 'client' (see grounds of

rejection above)] includes an in-lined stub ["A client makes an LRPC by calling into <u>its</u>

stub procedure" (Bershad, section 3.2, pg. 45; emphasis added)] as claimed.

Referring further to applicants' remarks on page 7 regarding the Section 102 rejections of the independent claims over Bershad: Applicants argued that Bershad does not disclose or suggest communication between managed and unmanaged object systems as recited in the claims.

The examiner disagrees for the following reasons: Again, applicants are arguing features which are not claimed. It is noted that the claims recite communication between managed and unmanaged <u>code</u>, not managed and unmanaged <u>object systems</u> as argued by applicants. Applicants further attempt to argue that unmanaged systems require the objects themselves to manage object lifetimes. However, no such limitation is present in the claims. Bershad's communication between protected [client] and unprotected [server] domains discloses the claimed communication between managed and unmanaged code because the protected domains are 'managed' by the client, while the unprotected domains are 'unmanaged' by the client.

Referring to applicants' remarks on page 8 regarding the Section 102 rejection of the independent claims over Nilsen: Applicants repeated the arguments as addressed in regard to the Bershad reference. Namely, applicants argued that Nilsen neither discloses nor suggests an in-lined stub and/or communications between managed and unmanaged object systems.

The examiner disagrees for the same reasons as provided above, and for the following additional reasons: Nilsen's stub is not external to the calling function, contrary to applicants' assertions. Nilsen explicitly states that the stub is hard-coded into the caller's code (Column 14, lines 2-6), making the stub in-lined (Column 15, lines

49-58) as claimed. Refer also to Column 26, lines 36-53 of Nilsen's specification for additional disclosure along these lines. Therefore, the examiner maintains that Nilsen does disclose the "in-lined stub" as claimed. Finally, Nilsen's communications between byte-code or JIT-translated [managed] methods and external byte-code [unmanaged] methods discloses the claimed communication between managed and unmanaged code.

Conclusion

6.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 703-305-7821. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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bdg
09 March 2004

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